Course Highlights

- Introduction
- Planning for Erosion and Sediment Control
- Erosion Control (Soil Stabilization) BMPs

- Sediment Control BMPs
- Wind Erosion Control BMPs
- Tracking Control BMPs
- Non-Stormwater Management BMPs
- Waste Management and Materials Pollution Control BMPs
- Class Exercise
- Field Demonstration of BMPs
Sediment Control BMPs

- SC-1 Temporary Silt Fence (SSP 07-430)
- SC-2 Temporary Sediment Basin
- SC-3 Temporary Sediment Trap
- SC-4 Temporary Check Dams (SSP 07-415)
- SC-5 Temporary Fiber Rolls (SSP 07-420)
- SC-6 Temporary Gravel Bag Berms (SSP 07-470)
- SC-7 Street Sweeping (SSP 07-360)
- SC-8 Temporary Sandbag Barrier
- SC-9 Temporary Straw Bale Barrier (SSP 07-460)
- SC-10 Temporary Drain Inlet Protection (SSP 07-490)
- Chemical Treatment
Temporary Sediment Controls

These practices can consist of:

- temporary linear sediment barriers (silt fences etc.),
- fiber rolls, gravel bag berms, or
- check dams to break up slope length or flow;
- or temporary sediment/desilting basin or sediment trap.

Sediment control generally involves: intercepting sediment laden runoff, slow the flow, and allow the suspended sediment particles to drop out of suspension.
SC-1 Temporary Silt Fence (SSP 07-430)

- Silt fences allow sediment to settle from runoff.
SC-1 Temporary Silt Fence
(SSP 07-430)

Permeable fabric designed to intercept and slow flow of sediment-laden sheet flow runoff

- **Material Requirements**
  - Silt fence shall be woven polypropylene or polymer fabric
  - Minimum width of 36 inches
  - The fabric shall conform to the requirements in ASTM (American Society for Testing and Materials) designation D4632 and have an integral reinforcement layer
  - The permittivity of the fabric shall be 0.05 l/sec minimum in conformance with ASTM designation D4491
SC-1 Temporary Silt Fence (SSP 07-430)

- Silt fence loses its permeability when it comes in contact with sediment-laden runoff
- Runoff is ponded

The geotextile is no longer passing 20 gal/min. The forces exerted are great - proper staking and keying-in of silt fence is critical
SC-1 Temporary Silt Fence (SSP 07-430)

- **Stakes Requirements**
  - Wood stakes shall be commercial quality lumber
  - Stake dimensions: 2 x 2 inches by 48 inches in length
  - Stakes shall be free from decay, splits or cracks longer than the thickness of the stakes
  - 5 ft min to 6 ft maximum stake spacing (unreinforced)
  - 10 ft maximum stake spacing with reinforcement

- “U,” “T,” “L” steel may be used, 48 inches in length
SC-1 Temporary Silt Fence
(SSP 07-430)

- **Design and layout**
  - Maximum length of slope draining to any point should be 200 ft
  - Slope of area draining to the silt fence should be less than 1:1 VH
  - For slopes steeper than 1:2 that contain large numbers of rocks or dirt clods that tend to dislodge additional protection may be necessary

200 ft max
SC-1 Temporary Silt Fence (SSP 07-430)

- “Key-in” bottom of silt fence a minimum of 12 inches

- Construct silt fence with a set-back of at least 3 ft from the toe of the slope
SC-1 Temporary Silt Fence
(SSP 07-430)

Installation Requirements

- Reach of silt fence shall not be longer than 500 ft
- Construct each reach so that the base elevation does not exceed 1/3 the height of the barrier
  example: \(\frac{1}{3}\) of 24” = 8”
Improper silt fence application can cause erosion

Incorrect application – across concentrated flow

Incorrect - up and down slopes
SC-2 Temporary Sediment Basins

- DSAs between 5 to 10 acres
- 3,600 ft³/acre storage
- Length ≥ 2x Width
- Depth 3 to 5 ft
- Impounding levees with adequate structural integrity
- Features to accommodate bypass or overflows
- Drain within 72 hours
SC-2 Temporary Sediment Basins

- A major obstacle to desilting basin effectiveness is the outlet design
SC-2 Temporary Sediment Basins

- A desilting basin must have an emergency spillway for overflow
SC-3 Temporary Sediment Trap

- Size limited by availability of right-of-way
- Not appropriate for drainage areas greater than 5 acres
- Sediment storage = 929 ft³/acre
- Length ≥ 3x Width
- Depth 3 to 5 ft
- If captured runoff has not completely infiltrated within 72 hours dewater trap
- Safety fencing may be required
SC-4 Temporary Check Dams  
(SSP 07-415)

- Are small devices constructed of rock, gravel bags, fiber roll, of other proprietary devices placed across natural or man-made channels or ditches
Fiber rolls:
- 8 to 10 inches in diameter
- Rice or wheat straw, wood excelsior, or coconut fibers
- 1 inch x 2 inch x 24 inch wood stakes

Bag size Requirements:
- Each gravel-filled bag shall have a length of 24-32 inches, width of 16-20 inches, and mass of approximately 30-50 lbs
- Non-woven polypropylene

Fill material:
- Fill material shall be between $\frac{3}{8}$" and $\frac{3}{4}$" inch in diameter
- Be free from clay balls, organic matter and other deleterious material
SC-4 Temporary Check Dams
(SSP 07-415)

Installation Requirements

- **Type I**
  - Restrain using rope and notched stakes
  - Furrows not required

- **Type II**
  - Single layer
  - Tightly abut bags; do not overlap
  - Clear bedding area
  - Place at a distance and height to allow small pools to form behind them
  - Space bags based on slope gradient
  - Provide sufficient spillway depth to prevent flanking around ends
SC-4 Temporary Check Dams
(SSP 07-415)
SC-5 Temporary Fiber Rolls (SSP 07-420)

- Consist of wood excelsior, rice or wheat straw, or coconut fibers that are rolled and bound into a tight tubular roll and placed on slopes to intercept runoff
SC-5 Temporary Fiber Rolls
(SSP 07-420)

Material Requirements:

- Fiber roll shall be either (1) prefabricated rolls or (2) rolled tubes of erosion control blankets
- For field rolled fiber rolls; roll into a minimum of 8 in diameter, and bond every 6 ft along the length of the roll
SC-5 Temporary Fiber Rolls
(SSP 07-420)

Installation Requirements:
- For breaking-up slope length fiber roll spacing is based on slope inclination
  - 1:4 or flatter – spacing shall be placed 20 ft apart
  - 1:4 to 1:2 – spacing shall be 15 ft apart
  - 1:2 or greater – spacing shall be 10 ft apart
- Place fiber rolls into a 2 to 4 inches trench
- Stake or tie fiber rolls into place
  - Tied fiber rolls staking is spaced at 2 ft apart
  - Stake spacing at 2 ft apart
SC-5 Temporary Fiber Rolls
(SSP 07-420)
SC-6 Temporary Gravel Bag Berms (SSP 07-470)

- Are nonwoven polypropylene geotextile type of bags placed across slopes to intercept runoff, reduce its flow velocity, and release it as sheet flow.
SC-6 Temporary Gravel Bag Berms
(SSP 07-470)

Material (bags) Requirements

- Bags shall be either polypropylene, polyethylene, or polyamide woven fabric
- Minimum unit weight of 8 ounces per square yard
- Burst strength exceeding 200 lbs in conformance with ASTM designation D4632
- Ultraviolet stability exceeding 70% in conformance with ASTM designation D4355
SC-6 Temporary Gravel Bag Berms
(SSP 07-470)

- Bag size Requirements:
  - Each gravel-filled bag shall have a length of 24-32 inches, width of 16-20 inches, and mass of approximately 30-50 lbs

- Fill material:
  - Fill material shall be between 3/8 and 3/4 inch in diameter
  - Be free from clay balls, organic matter and other deleterious material
SC-6 Temporary Gravel Bag Berms (SSP 07-470)

Installation requirements:

- Install along a level contour
- Clear bedding area of obstructions one inch or larger in diameter
- Place in single layer with ends abutted tightly and not overlapped
- Turn ends of bags (last 6 feet) up slope to prevent flow around ends
- Use in conjunction with temporary soil stabilization
- Construct barriers with a set-back of at least 3 ft from toe of slope
Visible sediment tracking shall be swept and vacuumed daily

Do not use kick brooms or sweeper attachments

Dispose of sweeper waste at an approved dumpsite
Street sweeping is an important tracking control.
Regular sweeping can reduce off site sediment.
SC-8 Temporary Sandbag Barrier

- Are a woven fabric type of bag designed to intercept and slow flow of sediment-laden sheet flow runoff
SC-8 Temporary Sandbag Barrier

- **Bag size Requirements:**
  - Each sand-filled bag shall have a length of 18 inches, width of 12 inches, thickness of 3 inches, and mass of approximately 33 lbs
  - Alternate bags sizes need approval by the Resident Engineer

- **Fill material:**
  - All sandbag fill material shall be non-cohesive, Class 1 or Class 2 permeable material free from clay and deleterious material
  - Conform to section 68-1.025 of the Standard Specifications
  - Fill Material is subject to approval of the RE
SC-8 Temporary Sandbag Barrier

- Installation requirements:
  - Install along a level contour
  - Turn ends of bags up slope to prevent flow around ends
  - Use in conjunction with temporary soil stabilization
  - Construct barriers with a set-back of at least 3 ft from toe of slope
SC-9 Temporary Straw Bale Barrier
(SSP 07-460)

- Not used in District 7
  - Not environmentally friendly
  - Cost prohibitive
  - Often installed incorrectly / i.e., a check dam on a paved surface
SC-10 Temporary Drain Inlet Protection
(SSP 07-490)

- Device used at storm drain inlets to settle or filter sediment-laden runoff
SC-10 Temporary Drain Inlet Protection
(SSP 07-490)

DI Protection Types

- Type 1 – Temporary Silt Fence
- Type 2 – Excavated Sediment Trap
- Type 3A – Gravel Bag Barrier
- Type 3B – Gravel Bag Barrier
- Type 4A – Fiber Rolls
- Type 4B – Foam Barrier
- Type 5 – Sediment Filter Bag
General requirements:

- Requires adequate area for ponding without encroaching upon the traveled way
- Frequent maintenance is required
- Draining areas greater than 1 acre shall be routed to a sediment trapping device
- May require other methods of temporary protection to prevent sediment-laden storm water and non-storm water flow from entering inlets
- If high flows are expected use other sediment trapping devices in conjunction with inlet protection
SC-10 Temporary Drain Inlet Protection
(SSP 07-490)

◆ **Type 1 - Temporary Silt Fence**
  - Appropriate in open areas subject to sheet flows
  - Flows should not exceed 0.5 cfs
  - Do not place fabric underneath grate inlet
SC-10 Temporary Drain Inlet Protection (SSP 07-490)

- Type 2 Excavated Sediment Trap
- Appropriate where relatively high heavy flows are expected and over flow capacity is needed
SC-10 Temporary Drain Inlet Protection
(SSP 07-490)
SC-10 Temporary Drain Inlet Protection
(SSP 07-490)

- Type 3A Gravel Bag Barrier
  - Appropriate where flows exceed 0.5 cfs and it is necessary to allow overtopping to prevent flooding
  - Flows shall not overtop curb
  - Ponded water shall not encroach on the traveled way
  - In areas with high silts and clayey soils use additional media for protection
SC-10 Temporary Drain Inlet Protection
(SSP 07-490)

- Type 3B Gravel Bag Barrier
  - Appropriate where flows exceed 0.5 cfs and it is necessary to allow overtopping to prevent flooding
  - Ponded water shall not encroach on the traveled way
  - In areas with high silts and clayey soils use additional media for protection
SC-10 Temporary Drain Inlet Protection
(SSP 07-490)
SC-10 Temporary Drain Inlet Protection (SSP 07-490)

- **Type 4A - Fiber Rolls and Type 4B - Foam Barriers**
  - Not appropriate for locations where they can not be properly anchored
  - Foam barriers – use on pavement and secure using anchoring nails, spikes, or adhesive
  - Fiber Rolls - use in unpaved areas around inlets and anchor using stakes
SC-10 Temporary Drain Inlet Protection (SSP 07-490)
SC-10 Temporary Drain Inlet Protection
(SSP 07-490)

- Type 5 – Sediment Filter Bag
  - Woven polypropylene or polymer material
  - Sized to fit catch basin or drainage inlet
  - Loops and dump straps incorporated into design
  - Include a restraint chord
  - Must be secured on all sides of catch basin or inlet
SC-10 Temporary Drain Inlet Protection
(SSP 07-490)
Chemical treatment of stormwater is a relatively new and unproven technology in California.

Chemical treatment includes the application of chemicals to stormwater to aid in the reduction of turbidity caused by fine suspended sediment.

Chemical treatment can reliably provide exceptional reduction of turbidity and associated pollutants where turbid discharges to sensitive waters cannot be avoided using other BMPs.

Typically, chemical use is limited to waters with numeric turbidity standards.
Limitations:

- The use of chemical treatment must have the advanced approval of the Regional Water Quality Control Board.
- Chemical treatment of storm water is a new technology and has not been used very often in California.
- Petroleum based polymers should not be used.
- Requires sediment basin or trailer mounted unit for chemical application.
- Batch treatment required. Flow through continuous treatment not allowed.
- Requires large area.
- Labor intensive operation and maintenance.
Course Highlights

- Introduction
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- Erosion Control (Soil Stabilization) BMPs
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- Non-Stormwater Management BMPs
- Waste Management and Materials Pollution Control BMPs
- Class Exercise
- Field Demonstration of BMPs
WE-1 Wind Erosion Control

Lack of wind erosion controls
WE-1 Wind Erosion Control

- Effectiveness depends on soil, temperature, humidity and wind velocity
- All equipment to ensure even distribution and have positive shutoff
- Temporary soil stabilizers and soil binders will also provide wind erosion control benefits

Soil binder applied via water truck
Regular spraying with water or a binder also reduces dust.
Covering stockpiles with plastic is an effective way of reducing wind erosion.
WE-1 Wind Erosion Control
WE-1 Wind Erosion Control
Course Highlights

- Introduction
- Planning for Erosion and Sediment Control
- Erosion Control (Soil Stabilization) BMPs
- Sediment Control BMPs
- Wind Erosion Control BMPs
- **Tracking Control BMPs**
- Non-Stormwater Management BMPs
- Waste Management and Materials Pollution Control BMPs
- Class Exercise
- Field Demonstration of BMPs
# Tracking Control

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TC-1 Temporary Construction Entrance (SSP 07-480)

Lack of stabilized entrance / exit
Lack of stabilized entrance / exit
Large diameter rock used as a stabilized entrance / exit.

- Construct sump within 20 feet of temporary construction entrance
- If aggregate is used place over geotextile fabric 12” deep
- Use 3”-6” diameter rock
- Minimum of 50ft in length
- All exit locations to be used continuously for a period of time shall be stabilized
- Design for heaviest equipment
- Limit number of entrances and exits
- Require their use when installed
TC-1 Temporary Construction Entrance (SSP 07-480)
This temporary access road is stabilized with gravel.
TC-2 Temporary Construction Roadway
Sites with clayey soils may require a wheel wash...

...such as this drive-through type
TC-3 Entrance/Outlet Tire Wash

...which splashes the wheels and undercarriage of the vehicle
TC-3 Entrance/Outlet Tire Wash

...and keeps the entrance clean without sweeping.
TC-3 Entrance/Outlet Tire Wash
Course Highlights

- Introduction
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- **Non-Stormwater Management BMPs**
  - Waste Management and Materials Pollution Control BMPs
  - Class Exercise
  - Field Demonstration of BMPs
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* Not included in SSP 07-346
Construction Site Housekeeping BMPs

- 07-346 Construction Site Management
07-346 Construction Site Management

- Spill prevention and control
- Material management
- Material storage
- Stockpile management
- Solid waste management
07-346 Construction Site Management

Provides for management of

- Hazardous waste
- Contaminated soil
- Concrete waste
- Sanitary/septic waste
- Liquid waste
07-346 Construction Site Management

- Water control and conservation
- Illegal connection and discharge detection and reporting
- Vehicle and equipment cleaning
- Vehicle and equipment fueling and maintenance
- Material and equipment over water
07-346 Construction Site Management

- Structural removal over or adjacent to water
- Paving, sealing, sawcutting, and grinding operations
- Thermoplastic striping and pavement striping
- Pile driving
- Concrete curing
- Concrete finishing
Dewatering *

*07-346 used when water from dewatering can be discharged within project limits. A separate SSP is needed when estimated quantities of water are greater or the dewatering operation are complex.

Pending - SSP 07-341 - Dewatering (Water Pollution Control).
NS-1 Water Conservation Practices (SSP 07-346)

- RE must approve washing activities if potential to discharge to storm drain or watercourse
- Inspect irrigation system and adjust watering schedules
- Shut off water source to broken lines, sprinklers, or valves
- Reuse water line flushing for landscape irrigation
- Do not wash paved areas
- Route water from water line repair to areas that infiltrate
- Prevent water truck filling areas from discharging

Instead of using a hose, this sediment should have been swept up
NS-2 Dewatering Operations
(SSP 07-346)

- Notify District Construction Storm Water Coordinator
- Use Caltrans Field Guide to Construction Site Dewatering
- Contractor to submit a Dewatering and Discharge Plan
- Use where groundwater or accumulated precipitation will be discharged from site
- Addresses sediment only
- Notify RE if pollutant other than sediment is present
- Must comply with applicable permits
NS-3 Paving and Grinding Operations (SSP 07-346)

- Cover drainage inlets and use linear sediment barriers to protect downhill watercourses.
- Limit paving, sawcutting, and grinding during the rainy season to locations where runoff can be captured.
- Vacuum slurry from saw cutting operations immediately.
- Collect grinding residue with vacuum.
- Substances used to coat asphalt equipment shall not contain soap, will be non-foaming and non-toxic.
NS-4 Temporary Stream Crossing

- Use where construction equipment must frequently cross a waterway
- If improperly designed they may increase pollution load through washouts and scouring
- Stabilize construction roadways and use sediment control BMPs
- May require RWQCB, USACE, DFG permits / approval
NS-4 Temporary Stream Crossing
NS-5 Clear Water Diversion

- May require RWQCB, USACE, DFG permits / approval
- If improperly designed they may increase pollution load through washouts and scouring
- Follow Caltrans Field Guide to Construction Site Dewatering
- Construct diversions with material free of potential pollutants
- Do not completely dam stream flow
Can be in liquid or solid form

- Refers to discharges and dumping caused by parties other than contractor
- Inspect site before beginning of job
- Inspect site on frequent and predetermined schedule
- Proceed with caution - notify RE at time of discovery
This hydrant flusher diffuser/de-chlorinator and leak detection survey are good practices to reduce the discharge of pollutants.
Limit cleaning or washing to control tracking or hazardous waste

RE approval required when soaps, solvent, or steam is used

Contain waste and recycle or dispose (refer to Liquid Waste and Hazardous Waste section of 07-356 SSP)

Conduct cleaning in a structure equipped with disposal facility
NS-8 Vehicle and Equipment Cleaning (SSP 07-346)

- Outside wash areas:
  - Located 50 ft from storm drains and watercourses
  - Paved area
  - Surrounded by containment berm
  - Sump to collect wash water
- Minimize water usage
- Use hoses equipped with positive shutoff valve

Don’t allow this on your site!

Vehicles and equipment should be cleaned in designated areas...preferably off site
NS-9 Vehicle and Equipment Fueling
(SSP 07-346)

- Fuel on site only when impractical to go off site
- Use a designated area approved by RE; level ground; 50 feet from storm drain inlets and water courses
- Mobile fueling kept to minimum
- Have spill kits in fueling area and on fueling trucks
- Clean up spilled materials immediately and spill kits available
- Use containment berms or dikes around fueling areas
- Use drip pans or absorbent pads when fueling on permeable areas
- Fueling nozzles shall have automatic shutoff control
Spill prevention and control

Use of drip pans and absorbents

Dedicated maintenance areas

Proper waste disposal (e.g., tires and batteries)

Leak repair

Secondary containment
Caltrans Requirements

- Use drip pans or absorbent pads during fueling, maintenance, cleaning and storage
- Park equipment over plastic sheeting or equivalent where possible. Plastic sheeting is not a substitute for drip pans or absorbent pads
- Use less hazardous products instead of hydraulic fluid when practicable
- Store equipment at least 50 feet from concentrated flows, drainage courses, or inlets
- Inspect equipment daily for leaks
NS-12 Concrete Curing
(SSP 07-346)

- Cover drain inlets before applying curing compound
- Prevent overspray of curing compound
- Minimize drift by applying as close to concrete as possible
- Use wet blankets to minimize discharge of water when curing concrete
NS-13 Material and Equipment Use
Over Water (SSP 07-346)

- Place drip pans and absorbent pads under vehicles and equipment
- Maintain a supply of spill cleanup material and keep it with the vehicle or equipment
- Place equipment and vehicles on plastic sheeting when located on docks, barges or other surfaces over water when equipment will be idle for more than one hour
- Use watertight curbs or toe boards on barges, platforms, docks, or other surfaces to contain material, debris, and tools
- Secure material to prevent spill or discharge
NS-14 Concrete Finishing
(SSP 07-346)

- Collect and dispose of water and solid waste
- Cover drain inlets located within 50 feet of sandblasting operation
- Minimize drift of sandblasted material by keeping nozzle close to the surface
- Inspect containment structures for damage each day and before predicted precipitation
- Remove solid waste from containment structure after each work shift
NS-15 Structure Demolition / Removal Over Water (SSP 07-346)

- Prevent demolished material from entering storm drain system and watercourses
- Debris covers and platforms must be approved by the RE
- Empty debris capturing devices regularly and handle using 07-346 Waste Management
- WPCM to conduct daily inspections of site within 50 feet of storm drain system or watercourses
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- **Waste Management and Materials Pollution Control BMPs**
- Class Exercise
- Field Demonstration of BMPs
Waste Management and Materials Pollution Control (Construction Site Management SSP 07-346)

- WM-1 Material Delivery and Storage
- WM-2 Material Use
- WM-3 Stockpile Management
- WM-4 Spill Prevention and Control
- WM-5 Solid Waste Management
- WM-6 Hazardous Waste Management
- WM-7 Contaminated Soil Management
- WM-8 Concrete Waste Management (SSPs 07-405 and 07-406)
- WM-8 Temporary Concrete Washout Facility
- WM-9 Sanitary/Septic Waste Management
- WM-10 Liquid Waste Management
WM-1 Material Delivery and Storage
(SSP 07-346)

- Properly label materials
- Store bagged or boxed material on pallets and cover during non-working days and when rain is predicted
- Facility shall provide for a spill containment volume able to contain precipitation from a 24-hour, 25-year storm, plus 10% of the aggregate volume of all containers or 100% of the capacity of the largest container whichever is greater

Substances that require storage in a containment facility

Well maintained temporary containment facility
WM-1 Material Delivery and Storage
(SSP 07-346)

- Facility shall be impervious to the materials for 72 hours.
- Cover secondary containment facilities during non-working days and when precipitation is predicted.
- Maintain secondary containment facility free from accumulated rainwater and spills; place into drums within 24 hours and handle as hazardous waste.

Temporary containment facility for fuel
WM-1 Material Delivery and Storage
(SSP 07-346)

- Curing compound requires proper storage
WM-2 Material Use
(SSP 07-346)

- Minimize or eliminate discharges of materials to the air, storm drain system, or watercourses
- Contractor to provide MSDSs to RE
- Train employees in emergency spill cleanup procedures
- Use recycled or less hazardous products
- Herbicides and pesticides must be applied by licensed applicator
- Contractor to complete and submit Report of Chemical Spray form to RE when applying herbicides or pesticides
Locate out of flood plains and 50 feet from concentrated flow, drainage courses, inlets

Applies to stockpiles of soil, concrete rubble, asphalt concrete, asphalt rubble, aggregate base and subbase

Active stockpile - up to 21 days without adding or removing material

Active stockpiles (prior to predicted precipitation)

- Cover with plastic, geotextile cover, or soil stabilizer
- Install linear sediment barrier
- Store cold mix on impermeable surface and cover with plastic
Inactive stockpiles (all times during rainy season and prior to predicted storms during non-rainy season)
- Cover with plastic, geotextile cover, or soil stabilizer
- Install linear sediment barrier
- Store cold mix on impermeable surface and cover with plastic

Place treated wood on pallets and cover with impermeable material during rainy season and when precipitation is predicted during non-rainy season

Control wind erosion using Section 10, Dust Control Standard Specification
WM-4 Spill Prevention and Control (SSP 07-346)

- Contractor shall implement spill and leak prevention procedures when chemicals or hazardous substances are stored.
- WPCM shall oversee and enforce spill prevention and control measures.
- Spills shall be reported to the WPCM; WPCM shall report to RE immediately.
- Spills shall be prevented from contacting stormwater before and during cleanup.
- Spills shall not be buried or washed with water.
Solid waste includes litter generated by the public.

Watertight dumpsters of sufficient size and number shall be provided.

Debris and waste shall be collected and removed weekly and when refuse reaches the fill line.

Additional containers required during demolition phase.

Provide trash receptacles in Contractor’s yard, field trailers, and lunch areas.
The following types of wastes are considered hazardous:

- Petroleum products
- Concrete curing compounds
- Palliatives
- Septic wastes
- Paints
- Stains
- Wood preservatives
- Asphalt products
- Pesticides
- Acids
- Solvents
- Roofing tar
WM-6 Hazardous Waste Management (SSP 07-346)

- WPCM shall oversee and enforce hazardous waste management practices
- Potentially hazardous waste shall be segregated from non-hazardous waste
- Hazardous waste shall be handled, stored, and disposed of as required by CCR Title 22, Division 4.5, Section 66262.34, and CFR Title 19, Parts 261, 262, and 263
- Store in sealed containers, labeled with content, and date of accumulation
- Store waste away from storm drains, watercourses, moving vehicles, and equipment
- Clean paint brushes and equipment in containment areas
- Dispose of hazardous waste within 90 days of being generated
- Contractor to provide RE a copy of manifest
Typical soil contamination is due to spills, illicit discharges, and underground storage tank leaks, or aerially deposited lead (ADL). Contaminated soils tend to occur on projects in urban or industrial areas.

- Contractor to identify contaminated soil from spills or leaks
- Prevent flow of water, including groundwater from mixing with contaminated soil by using
  - Berms
  - Cofferdams
  - Freeze walls
  - Concrete seal course
- Sample water if it comes in contact with contaminated soil
- Hazardous contaminated soil shall be disposed of as hazardous waste
WM-8 Concrete Waste Management
(SSPs 07-346, 07-405, and 07-406)

Concrete washout

Uncontrolled concrete washouts
WM-8 Concrete Waste Management
(SSPs 07-346, 07-405, and 07-406)

- PCC and AC waste shall not be allowed to enter storm drains and watercourses
- Line all washouts with 10-mil polyethylene sheeting
- Install signs designating temporary washout areas
- Locate washout facilities a minimum of 50ft from storm drains, water courses
- Disposal of PCC waste offsite
WM-8 Temporary Concrete Washout Facility
(SSPs 07-346, 07-405, and 07-406)
Locate sanitary facilities away from storm drains, water courses.

Do not discharge or bury within Department right-of-way.

WPCM to monitor weekly.
WM-10 Liquid Waste Management
(SSP 07-346)

- Liquid waste cannot enter storm drain or watercourses
- Contain liquid in leak-proof containers of sufficient capacity
- Locate containers at least 50 feet from storm drains, watercourses, and moving vehicles
- Drilling fluids and residue shall be disposed outside the Department right-of-way
- Disposal of certain liquid waste may be subject to specific laws or regulations

Tie Back wall construction
Erosion and Sediment Control
Labor Estimates

- **Soil Stabilization***
  - **Hydroseeding**
    - 150,000 ft² a day (flat turf)
    - 22 bales @ 50lb a bale in a 3000 gal truck
  - **Hydro Mulch (BFM)**
    - 12,000 ft² per 3000 gal truck
    - 5 loads per day
  - **Straw Mulch**
    - 2.5 acres an hour
    - 1 to 2 bales a min
    - 74 lb bale covers 800 ft² @ 2 tons per acre

- **Sediment Controls***
  - **Silt Fence**
    - Foreman and 5 laborers
    - 1000 linear ft a day
  - **Fiber Rolls**
    - Foreman and 5 laborers
    - 1500 linear ft a day

*Estimates are based on vendor quotes actual installation time will vary based on site location, Slope steepness, and accessibility.
## Erosion and Sediment Control
Temporary BMP Cost Data

### State of California - Department of Transportation

### CONTRACT ITEM COST DATA

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**Unit Total**

*LS 148 148.00 $4,559.67 $719,802.00*

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*LS 225 225.00 $16,434.36 $7,176,302.04*

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*M2 25 25.00 $0.00 $205,600.00*
### Erosion and Sediment Control

#### Temporary BMP Cost Data

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*Page 7*
## Erosion and Sediment Control

**Temporary BMP Cost Data**

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- **Total Amount**: $74,322.50

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- **EA**: 49.00, **Total Amount**: $19,352.00

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- **Total No. of Proj.**: 6
- **Total Amount**: $15,368.00

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**Unit Sub Total**
- **EA**: 377.00, **Total Amount**: $127,995.40

### Item Code 074638: Street Sweeping
- **Total No. of Proj.**: 32
- **Total Amount**: $227,006.45

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**Unit Sub Total**
- **LS**: 25.00, **Total Amount**: $348,700.00

### Item Code 074641: Traffic Control System
- **Total No. of Proj.**: 25
- **Total Amount**: $105,303.77

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**Unit Sub Total**
- **LS**: 510.00, **Total Amount**: $10,950,323.77
Class Exercise
Millionaire Review Question #1

The letters BMP are also known as?

a) Best Materials Practical

b) Big Major Problem

c) Best Method Practice

d) Best Management Practice
Millionaire Review Question #2

Which one of the six BMP categories found in the BMP Manual, includes Scheduling?

a) Soil Stabilization

b) Non-Storm Water Management

c) Sediment Control

d) Tracking Control
Which one of the following is **not** a Soil Stabilization BMP?

- a) Hydraulic Mulch
- b) Slope Drains
- c) Earth Dikes
- d) Desilting Basin
Millionaire Review Question #4

What is the Caltrans minimum required application rate for straw mulch?

a) 10 tons per acre  
b) 1 ton per acre  
c) 20 ton per acres  
d) 2 tons per acre
“Keying in the bottom” is an installation requirement of which BMP?

a) Gravel Bag Berms
b) Grocery Bag Berms
c) Silt Fence
d) Geotextiles / Plastic Covers
Millionaire Review Question #6

What is a common way for construction sites to achieve/maintain the rainy season DSA requirement?

a) Apply temporary SC regularly
b) Apply temporary EC regularly
c) Install both silt fence and straw bales
d) Apply permanent SC ASAP
Questions ?